



Meinberg Radio Clocks

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IMS - LANTIME M4000: Ultra-Versatile Platform for Telecom Synchronization Application

The Meinberg LANTIME M4000 has been designed to fulfill the synchronization requirements of modern 4G/5G/LTE networks. It is capable to act as a Primary Reference Time Clock (PRTC) and, because of its unmatched flexibility, can be deployed in different scenarios. The modularity of the IMS platform (Intelligent Modular System) allows the M4000 to be configured for all areas of a mobile backhaul network: in the core, metro or access network areas.

Key Features

- GNSS (GPS, GLONASS, Galileo, BeiDou) synchronized PRTC (compliant to ITU-T G.8272)
- Optimized for ETSI Rack (300mm / 21 inches) or 19 inch Rackmount
- Carrier Grade NTP Time Server with Hardware Time Stamping
- SyncE - Synchronous Ethernet In/Out
- Web GUI, CLI, SNMP, RADIUS, TACACS+
- GBit PTP Interface (SFP/RJ45)
- E1 / T1 Input / Output Options
- Optimized for ETSI Rack (300mm / 21 inches) or 19 inch Rackmount.
- Up to 10 PTP (IEEE 1588-2008) modules
- Redundant power and receiver option (eg GPS / GLONASS combination)
- IEEE 1588 Grandmaster (multi-profile, incl. ITU-T G.8275.1 and G.8265.1)
- E1/T1 BITS and Clock In/Out (ITU-T G.703) 1PPS In/Out 10 MHz In/Out PTP and NTP Input
- Meinberg's LANTIME time server is available with a variety of additional output options: IRIG Time Code, frequency synthesizer and programmable pulse outputs illustrate some of the many expansion options for your NTP server
- Up to 24 additional LAN ports

Description

Depending on the installed modules and the selected synchronization sources, the 4U rackmount LANTIME M4000 can play different roles. By supporting multiple input sources utilizing Meinberg's IRSA (Intelligent Reference Switching Algorithm) technology, the M4000 accepts GPS, GLONASS, Galileo, BeiDou, PTP, NTP, SyncE, 1PPS or E1/T1 as possible synchronization inputs to be able to act as an Edge Grandmaster Clock. IRSA is useful to bridge potential GNSS outages or, if desired, completely avoid depending on GPS / GLONASS / Galileo / BeiDou availability. A highly stable oscillator ensures a holdover period of several hours or days depending on the target application even if no synchronization source is available anymore. Using an external PRC allows to extend the holdover capabilities to whatever level is required at a certain point in the network.

The PTP implementation support both ITU-T profiles, ITU-T G.8265.1 for frequency and ITU-T G.8275.1 for frequency and phase. This allows to provide accurate frequency and phase synchronization over packet networks to all network elements requiring synchronization, including 2G/3G/4G base stations as well as LTE advanced networks. The M4000 can act as a Telecom Grandmaster for hundreds of clients.

For NTP-based synchronization, each of our HPS module network interfaces of the LANTIME M4000 can be configured to act as a carrier grade NTP server with 8 ns time stamp accuracy, serving up to 400,000 NTP requests per second on each port.

The M4000 supports up to 40 pulse and frequency outputs like PPS, 10 MHz as well as software selectable T1 or E1 outputs to synchronize Telecom equipment or measurement devices.

The modular approach of the IMS platform allows field-replacement and hot-swap capabilities for IO modules and power supplies. This concept ensures future-proofness and expandability by allowing to add or replace modules when new technologies or interfaces are required and makes this product one of the most scalable and flexible synchronization solutions on the market.

Characteristics

Supported Reference Signals	<p>The following reference sources can be used to synchronize the system:</p> <ul style="list-style-type: none"> * GPS - Global Positioning System * GLONASS - Russian GNSS * GALILEO - European GNSS * BeiDou - Chinese GNSS * PZF - German DCF77 longwave radio signal * PTP/IEEE1588 - Precision Time Protocol * NTP - Network Time Protocol * SyncE - Synchronous Ethernet * Timecodes - IRIG/AFNOR timecodes (AM/DCLS) * PPS -Pulse Per Second * 10MHz - 10MHz reference frequency * 2.048kHz - 2.048kHz reference frequency * E1/T1 - Telecom Synchronization Input with full SSM/BOC support <p>The priority of all input signals can be freely configured in addition to a bias value and a precision level specification for each source.</p>
Status Indicators	<p>Four bicolor LEDs showing status of:</p> <ul style="list-style-type: none"> - reference time - time service - network - alarm
Display	<p>LC Display, 4 x 16 characters</p>
Control Elements	<p>Eight push buttons to set up basic network parameters and to change system settings.</p>
Frequency Outputs	<p>Frequency Synthesizer for arbitrary frequencies between 0.125 Hz and 10 MHz, adjustable phase, output via external modules such as [1]IMS-BPE modules</p>
Accuracy of Pulse Outputs	<p>< ±50ns (OCXO SQ, OCXO MQ, OCXO HQ, OCXO DHQ)</p>
Network Interface	<p>Basic Chassis:</p> <p><u>CPU-C05F1</u> 1 x 10/100 MBit, RJ45</p> <p><u>CPU-C15G2</u> 1 x 100/1000BASE-T RJ45 1 x 1000BASE-T SFP</p>

Network Expansion - LNE Options:

Up to 24 additional network interfaces (GbE Gigabit Support) with 10/100/1000 MBit RJ45 connector or 1000BASE-T SFP (Multimode / Singlemode).

Universal Serial Bus (USB) Ports	1x USB port on front panel for: <ul style="list-style-type: none"> - installing firmware upgrades - performing backups and restoration of configuration files - copying security keys - locking & unlocking front buttons
Operating Voltage	Maximum power range: AD10: 90 - 265 V AC, 47-63 Hz / 90-250 V DC DC20: 20 - 60 V DC DC10: 10 - 36 V DC Redundant power supplies available
Form Factor	Modular rackmount 4U / 84HP chassis for 19" / 21" racks
CPU	CPU-C15G2 * Intel® Atom
Operating System of the SBC	GNU/Linux 4.x
Network Protocols OSI Layer 4 (Transport Layer)	TCP, UDP
Network Protocols OSI Layer 7 (Application Layer)	Telnet, FTP, SSH (including SFTP, SCP), HTTP, HTTPS, syslog, SNMP
Internet Protocol (IP)	IPv4, IPv6
Network Autoconfiguration Support	IPv4: Dynamic Host Configuration Protocol - DHCP (RFC 2131) IPv6: Dynamic Host Configuration Protocol - DHCPv6 (RFC 3315) and Autoconfiguration Networking - AUTOCONF (RFC 2462)
Network Time Protocol (NTP)	NTP v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905) SNTP v3 (RFC 1769), SNTP v4 (RFC 4330) MD5 / SHA-1 Authentication and Autokey Key Management
Parallel Redundancy Protocol (PRP)	PRP (IEC 62439-3)
Time Protocol (TIME)	Time Protocol (RFC 868)
IEC 61850	Synchronization of IEC 61850-compliant devices using SNTP
Hypertext Transfer Protocol (HTTP)	HTTP/HTTPS (RFC 2616)

Secure Shell (SSH)	SSH v1.3, SSH v1.5, SSH v2 (OpenSSH)
Telnet	Telnet (RFC 854-RFC 861)
Simple Network Management Protocol (SNMP)	SNMPv1 (RFC 1157), SNMPv2c (RFC 1901-1908), SNMP v3 (RFC 3411-3418)
Physical Dimensions	483 mm x 176 mm x 274 mm - width x height x depth
Supported Temperature	Operational: 0 - 50 °C (32 - 122 °F) Storage: -20 - 70 °C (-4 - 158 °F)
Supported Humidity	Max. 85 % (non-condensing) at 40 °C
Technical Support	Meinberg offers free lifetime technical support via telephone or e-mail.
Warranty	Three-year warranty
Firmware Updates	Firmware is field-upgradeable, updates can be installed directly from the unit or via a remote network connection. Software updates are provided free of charge for the lifetime of your Meinberg product.
RoHS Status of Product	This product is fully RoHS-compliant.
WEEE Status of Product	This product is handled as a B2B (Business to Business) category product. To ensure that the product is disposed of in a WEEE-compliant fashion, it can be returned to the manufacturer. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will bear the costs for the waste disposal itself.

Manual

There is no online manual available for this product.: [2][Contact us](mailto:info@meinberg.de)

Links:

[1] <https://www.meinbergglobal.com/english/products/ims-output-modules.htm>

[2] <mailto:info@meinberg.de>